

Physics - ICS Part 1 Physics Chapter 11 Short Questions Test

Q1. Give an example of a natural process that involves an increase in entropy .

Ans 1:

Q2. Write kelvin statement of the second law of thermodynamics.

Ans 1: It is impossible to devise a process which may convert heat, extracted from a single reservoir, entirely into work without leaving any change in the working system.

Q3. Specific heat of a gas at constant pressure is greater than specific heat at constant volume why?

Ans 1: At constant volume, no work is done and the entire heat is utilized in raising the internal energy of the system. But under constant pressure, heat is not only required to raise the internal energy but also to do work against constant pressure. Hence specific heat of a gas at constant pressure is greater than specific heat at constant volume.

Q4. What happens to the temperature of the room, when an air conditioner is left running on a table in the middle of a room ?

Ans 1: No change will be observed because the heat is absorbed and expelled in the same room. Hence there will be no effect on the room's temperature.

Q5. What do you mean by triple point of water?

Ans 1: The triple point of water is a state in which ice, water and vapour coexists in equilibrium and it occurs uniquely at one particular pressure and temperature. Its value is 273.16 K.

Q6. What is thermodynamic scale of temperature? Give its unit.

Ans 1: The thermodynamic scale of temperature is defined by choosing 273.16 K as the absolute temperature of the triple point of water as one fixed point and absolute zero as the other. The unit of thermodynamic scale is kelvin.

Q7. State Carnot's theorem.

Ans 1: It states that no heat engine can be more efficient than a Carnot engine operating between the same two temperatures.

Q8. A real heat engine is less efficient than Carnot engine. Why?

Ans 1: Carnot engine operates in an ideal reversible cycle and ideal gas is used as the working substance.

No practical heat engine can be perfectly reversible. All real heat engines are less efficient than Carnot engine due to friction and other heat losses.

Q9. What is the similarity and difference between internal energy and gravitational P.E?

Ans 1: Internal energy is similar to the gravitational P.E. So like the potential energy, it is the change in internal energy and not its absolute value, which is important.

Internal energy depends upon temperature of the system while gravitational P.E depends on position of the particle.

Q10. State second law of thermodynamics in terms of entropy.

Ans 1: It states that if a system undergoes a natural process, it will go in the direction that causes the entropy of the system plus the environment to increase.
